

COUNTY FOREST COMPREHENSIVE LAND USE PLAN

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CHAPTER 600

CONSERVATION AND PROTECTION OF FOREST RESOURCES (Protection)

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600 CONSERVATION OF FOREST RESOURCES

OBJECTIVE

To conserve, manage and protect the trees and resources of the forest from preventable losses resulting from fire, insects, diseases and other destructive elements including those caused by wildlife and people. Protective methods shall include proactive management through silvicultural methods, mechanical treatments and controls, chemical treatments, biological controls, proper planning, regulation establishment and regulation enforcement.

The DNR provides statewide technical guidance that will be used to inform local decisions. This guidance will be referenced to make decisions at the county level. Guidance from other entities including Cisma's, DATCP, and other state and federal agencies will be utilized as appropriate.

604 CONTROL OF TREE HEALTH AND REGENERATION (SILVICULTURE)

Forests as an ecosystem, historically existed with limited human interference, however industrialization and large increases in the human population have forever changed the forest. In Vilas County the forest and trees that currently exist are the result of an ecosystem that was forever changed by the cutover period in the late 1800's and early 1900's and the wildfires that ravaged after that cutting and also lands that were converted to agriculture and are now again forest. Severe wildfires of that time also likely changed the soil chemistry, making the change permanent in the terms of human years.

Today the forest ecosystem is severely limited by direct human interaction including development of roads, buildings and infrastructure, recreational use, and preclusion of fire. The forest is also put at increased danger from that human use including increased ignition sources for fires, increased introduction of pests and invasive species, fragmentation of the forest and the potential for unsustainable harvesting practices resulting from human demand for forest products. The fact that the forest and trees still exist in Vilas County is a testament to the natural resiliency of the forest and trees themselves.

Although forests are an ecosystem with many working parts, trees are the cornerstone of that ecosystem. Without trees, the forest ceases to exist. The forest ecosystem is limited by

past and current human interactions, however the health and vigor of the trees within the forest can be managed and protected with assistance by humans.

Each tree in the forest has specific needs for space, light, water and nutrients. Each different tree species has a variation in these needs, this is known as silvics of the species. The land and soil, also known as a site, provide the limits of water and nutrients. The number of trees growing on a site determines the availability of space and light. Trees with proper amounts of space, light, water and nutrients are healthy and vigorous, have rapid growth, and are resilient to insects and disease. Trees lacking space, light, water or nutrients decline in health, decline in growth and are less resilient to insects and disease.

Silviculture is a science that has developed since the cut-over period. Under the practice of silviculture, individual sites on the forest are assessed to determine the tree species potential based on soils and water availability. Site indicators are used to determine the tree species which are best suited to the site. Prescriptions for the sites are then developed to provide management activities which maximize tree growth, health and resiliency and provide plans for regeneration of the trees for the future. Prescriptions commonly include timber harvesting, timber stand improvement, site preparation and tree planting.

Silvicultural prescriptions are dependent upon the tree species needs. In general, a prescription of selective harvesting is appropriate for tree species which reproduce by seed and that tolerate shade as seedlings such as northern hardwoods. A prescription for thinning, shelterwood harvests and seed tree harvest are appropriate for tree species which reproduce by seed and tolerate moderate shade as seedlings such as white pine and oak or trees species that are overcrowded and not yet ready for regeneration such as oak. A prescription for coppice harvesting or clearcutting followed by site preparation and planting are appropriate for tree species which do not reproduce by seed and require total sunlight as seedlings such as aspen, jack pine and red pine.

While it is not possible to manage every tree on the forest individually, through the use of silviculture, individual sites can be managed to provide the tree species present adequate

space, light, nutrients, and water. Under this plan, Vilas County will utilize sound silviculture to maximize tree health, insure regeneration of the forest for future generations, and maximize the resiliency of the forest. Proactive forest management utilizing sound silviculture will be practiced on all Vilas County Forest Lands.

604.1 COOPERATION WITH THE DEPARTMENT OF NATURAL RESOURCES

Pursuant to s. 28.11, Wis. Stats. and the Vilas County Forest and Land Ordinance, the Vilas county **will cooperate with the designated DNR Liaison and Forestry Team Leader** in protection of tree and forest health through proactive forest management utilizing sound silviculture, and during project planning and management.

605 FIRE CONTROL

Damage to the forest caused by uncontrolled fire can create an important challenge in the management of the forest. Loss of resource values caused by fire will be minimized through organized prevention, detection and suppression methods. Maintaining a healthy forest is key to fire management. The DNR is responsible for all matters relating to the prevention, detection and suppression of forest fires outside the limits of incorporated villages and cities, as stated in s.26.11(1), Wis. Stats. The DNR works cooperatively with local fire departments in all fire control efforts. Vilas County Forest is part of the _____ (*intensive / extensive / cooperative - Select the proper fire control designation for your County Forest*) Forest Fire protection area. The Fire Management Handbook No. 4325.1 and the Area Operations Plan shall serve as the guidelines for fire control activities.

605.1 COOPERATION WITH THE DEPARTMENT OF NATURAL RESOURCES

Pursuant to s. 26.11(4) and s. 28.11(4)(f), Wis. Stats., and of the Vilas County Forest and Land Ordinance, the county may cooperate with the DNR in the interest of fire prevention, detection and suppression on the County Forest. This is accomplished through agreements authorizing the DNR to use County Forest land or to utilize county personnel and equipment for fire protection activities.

605.1.1 Personnel

County Forest personnel, upon request from the DNR, shall be made available for forest fire control efforts within the county in accordance with an established memorandum of understanding (MOU). The DNR is responsible for training and directing the activities of county personnel in accordance with the rules identified in the Fire Management Handbook, No. 4325.1.

605.1.2 Equipment

County Forest equipment, upon request and as identified in the MOU, shall be available for forest fire control suppression including forestry trucks, chainsaws and various small equipment. During periods of high fire hazard, all County Forest vehicles and/or crews should be equipped with one or more back pack cans, axes or shovels, appropriate personal protective equipment, mobile communication and any other equipment deemed essential by the MOU. All hand tools shall be maintained and provided by the DNR.

605.1.3 Fire Detection

Fire detection is the responsibility of the DNR. County Forestry personnel may assist and report any wild fires to the DNR, local Fire Department or 911 Dispatch.

605.1.4 Forest Fire Prevention- Human causes

DNR fire control personnel are authorized by the county to place fire prevention signs at recreational areas and other strategic locations within the forest. The County conducts and controls all operations (including harvesting) on the forest in a manner designed to prevent forest fires. The use of the county forest and the Department will coordinate during high fire danger periods to impose any necessary restrictions. These restrictions may include, but are not limited to, recreation and logging.

605.1.4 Forest Fire Prevention-

DNR fire control personnel are authorized by the county to place fire prevention signs at recreational areas and other strategic locations within the forest. The County conducts and controls all operations (including harvesting) on the forest in a manner designed to prevent forest fires. The use of the county forest and the Department will coordinate during high

fire danger periods to impose any necessary restrictions. These restrictions may include, but are not limited to, recreation and logging.

605.2 DEBRIS BURNING

Unauthorized burning of debris will not be permitted on County Forest Lands pursuant to s. 26.12(5), Wis. Stats.

605.3 CAMP FIRES

During periods of high fire danger, use of campfires may be restricted.

605.4 PRESCRIBED BURNING

All prescribed burning on County Forest lands will follow the DNR recommendations. See Prescribed Burn Handbook No. 4360.5 for details. Prescribed fire may be an effective management tool on the County Forest.

605.5 COUNTY FOREST FIRE HAZARD AREAS

The DNR primary emphasis will be placed on fire control efforts in pine areas. Maps of these areas are available at the local DNR field office. The County will cooperate with DNR Fire Control in providing for firebreaks or access ways. Existing access roads, firebreaks and water access points will be maintained as deemed necessary. Secondary emphasis will be placed on hardwood areas with no firebreaks developed or maintained. However, access roads will be maintained as defined in Chapter 700 of this plan.

610 CONTROL OF FOREST PESTS & PATHOGENS

610.1 DETECTION

Damage to the forest caused by insects, other pests and diseases can adversely affect management of the forest resources. Losses to resource values impacted by forest pests will be minimized through integrated pest management methods, with emphasis on silvicultural prescriptions (timber sales). The detection and control of pest problems will be accomplished by county and DNR personnel in cooperation with other agencies.

610.2 PEST SURVEYS

Pest surveys are conducted under the direction of the DNR's forest health specialists. The County may cooperate by providing personnel and equipment to assist in these operations.

610.3 SPECIFIC PESTS AND PATHOGENS OF CONCERN

Integrated pest management for the purpose of this Plan, is defined as follows:

“The maintenance of destructive agents, including insects, at tolerable levels, by the planned use of a variety of preventive, suppressive, or regulatory tactics and strategies that are ecologically and economically efficient and socially acceptable.”

The integrated pest management control and methodology shall be determined jointly by the County Forest Administrator, and DNR liaison forester in consultation with the DNR district Forest Health Specialist. Suppression of forest pests may include the following:

1. Silvicultural prescriptions, including timber sales.
2. Biological control.
3. Chemical control.

610.3.1 Specific Pests of Interest

610.3.1.1 Gypsy Moth

The gypsy moth is a non-native pest that is well-established in the eastern two-thirds of Wisconsin. Gypsy moth caterpillars feed on the leaves of about 300 species of trees and shrubs. At high populations, they may completely defoliate trees in the spring. Repeated defoliations may weaken trees and leave them susceptible to other insects and diseases. Adult gypsy moths do not feed, but the adult females lay thousands of eggs which are easily transported to new areas by humans on firewood, outdoor furniture, camping equipment and vehicles.

Fifty of Wisconsin's 72 counties are under quarantine for gypsy moth. Pockets of gypsy moth infestation flare up periodically within these counties. These outbreaks may range from a single woodlot to thousands of acres. Local communities, individual property owners or the County may choose to spray to suppress these outbreaks if severe. Vilas County will assess gypsy moth impacts as they occur and will determine appropriate response actions, including

consideration of aerial spraying when appropriate.

Additionally, any firewood allowed on County forest property, including County owned campgrounds, shall be required to be locally sourced or purchased from a vendor that can verify kiln drying processes before movement to Vilas county.

610.3.1.2 Jack Pine Budworm

Jack pine budworm, *Choristoneura pinus*, is a native needle-feeding caterpillar that is generally considered the most significant pest of jack pine. Red, Scotch and white pine, and spruce, can also be defoliated and suffer top-kill and mortality by jack pine budworm. Vigorous, young jack pine stands are less likely to be damaged during outbreaks. The most vigorous stands are well stocked, evenly spaced, fairly uniform in height, and less than 45 years old. Stands older than 45 years that are growing on very sandy sites and suffering from drought or other stresses are very vulnerable to damage. Tree mortality and top-kill are more likely to occur in these stands. In addition, stressed stands are more susceptible to attack by Ips bark beetle. Mortality from Ips can occur for 2-3 years after the jack pine budworm outbreak collapses. This mortality and top-kill create fuel for intense wildfires.

It will be Vilas county's strategy to harvest at the appropriate rotation age, maintain high stand densities (without overcrowding), and use good site selection for jack pine. This will be an effort to help avoid budworm-caused tree mortality and reduce the threat of damaging wildfires while still providing suitable conditions for jack pine regeneration. Prompt salvage following an outbreak will also help reduce the possibility of wildfire. Esthetic strips and/or islands should not be used. Leaving these esthetic strips/islands can prolong the outbreak by giving the budworm areas for breeding. Use of insecticides is not warranted in combating this forest pest on the County Forest.

610.3.1.3 Oak Wilt

Oak wilt, *Bretziella fagacearum*, is a destructive disease of oak trees. It is responsible for the death of thousands of oak trees in forests, woodlots, and home landscapes each year. Oak wilt is caused by a fungus that invades and impairs the tree's water conducting system, resulting in branch wilting and tree death. Trees in both the red oak group and white oak group are affected. There is no known cure once a tree has oak wilt. Prevention of new oak wilt infection centers is the best management option and involves avoiding injury to healthy trees and removing dead or diseased trees. Vilas county will use the [Oak Harvesting Guidelines to Reduce the Risk of Introduction and Spread of Oak Wilt](#) for management guidance. If pruning is necessary or damage is incurred **during the growing season**, e.g. through construction activities or storms, the wounds should be painted immediately with a wound paint.

Vilas County contracts for silvicultural treatments **and other projects** on the County forest that contain and disturb oak will require the following contract clauses in relation to Oak Wilt:

The trees on the project area contains oak, the Contractor agrees to follow Oak Wilt restriction guidelines. The Contractor **may not conduct dirtwork, roadwork, skidding, or cutting of trees from April 1 through July 15 on County owned property.**

Additionally, any firewood allowed on County forest property, including County owned campgrounds, shall be required to be locally sourced or purchased from a vendor that can verify kiln drying processes before movement to Vilas county.

When Oak Wilt is identified on County owned lands within an intensive use area, it will be Vilas County's policy to cut infected trees and debark or chip them. Once chipped or debarked, the materials shall be retained on the site or directly adjacent and be covered with plastic for a period of six months to kill the fungus and any insects in the material. A vibratory plow, or similar implement, will also be used to sever root grafts on isolated pockets where feasible.

When Oak Wilt is identified on County owned lands outside of an intensive use area, firewood collection within that area will be immediately restricted, infected trees will be immediately cut and chipped on site and a vibratory plow, or similar implement, will also be used to sever root grafts on isolated pockets.

610.3.1.4 Forest Tent Caterpillar

Forest tent caterpillar, *Malacosoma disstria*, can be found throughout the United States and Canada wherever hardwoods grow. The favored hosts in Wisconsin are aspen and oak. This native insect causes region-wide outbreaks at intervals from 10 to 15 years; outbreaks usually last 2 - 5 years in the Lake States. Severe and repeated defoliation can lead to dieback and/or reduced growth of affected trees, which in some instances may be significant. Populations are often controlled by natural enemies, helping the population crash. Aerial spraying of insecticides can be an option for control as well. It will be Vilas County's strategy to employ sound silvicultural practices to combat this cyclic pest.

610.3.1.5 Two-lined Chestnut Borer

The two-lined chestnut borer, *Agrilus bilineatus*, is a common secondary pest in trees which have been severely defoliated several years in a row. Oaks that are under stress from drought and/or defoliation by insects such as gypsy moth (*Lymantria dispar*), fall cankerworm (*Alsophila pometaria*), and forest tent caterpillar (*Malacosoma disstria*) can be infested and killed by two-lined chestnut borer. Prevention of two-lined chestnut borer through sound silvicultural practices is the best management option. Postponing management activities in stressed stands for two years after severe drought and/or defoliation have ended will provide time for trees to recover and reduce their susceptibility to two-lined chestnut borer attack. Infestations should be salvaged promptly. Vilas County will strive to maintain healthy trees through sound silvicultural practices to discourage infestation.

610.3.1.6 Emerald Ash Borer

The emerald ash borer, *Agrilus planipennis*, was accidentally introduced to North America from Asia in 2002. Emerald ash borer (EAB) infestations in Wisconsin have resulted in widespread mortality to *Fraxinus* species including green, white, and black ash. It is expected that 99% of the ash trees in Wisconsin will die. Ash comprises a significant component in the northern hardwood timber type and can be found in nearly pure stands in some lowland areas. Adult EAB beetles feed on foliage but it is the larvae that cause mortality by feeding on the phloem and outer sapwood of the ash trees.

The [Emerald Ash Borer Silviculture Guidelines](#) are available to help resource managers make informed stand-level decisions to manage forests that are not yet infested by EAB, as well as implement salvage harvests and rehabilitation in stands that have already been impacted by EAB.

It is Vilas County's policy to follow the Emerald Ash Borer Silviculture Guidelines.

Additionally, any firewood allowed on County forest property, including County owned campgrounds, shall be required to be locally sourced or purchased from a vendor that can verify kiln drying processes before movement to Vilas county.

610.3.1.7 Heterobasidion Root Disease (HRD)

Heterobasidion root disease (HRD, previously called annosum root rot), is caused by the fungus, *Heterobasidion irregulare*. It is a serious disease that causes pine and spruce mortality in Wisconsin, but over 200 woody species have been reported as hosts. Red and white pine trees are most commonly affected in plantation-grown stands subjected to thinning. The disease was first confirmed in Wisconsin in 1993 and has since been found in a number of counties throughout Wisconsin. Diseased trees, including overstory trees and understory seedlings and saplings, will show fading, thin crowns with tufted foliage, and eventual mortality. Currently there are no curative treatments to eliminate the HRD pathogen from a stand once it is infested, so preventing disease introduction is the best approach.

Infection most often occurs when HRD spores land and germinate on a freshly cut stump. The pathogen then grows into the root tissue and progresses underground from tree to tree through root contact. As the pathogen spreads, and trees decline and die, an ever-expanding pocket of mortality is formed. HRD fruit bodies, or conks, may be found at the base of dead trees and old stumps. Fruit bodies are most commonly observed in the fall but can be found any time of the year.

Vilas County contracts for silvicultural treatments **and other projects** on the County forest that contain and disturb pine or spruce will require the following contract clauses in relation to HRD:

The Vilas County Forest is at risk from introduction of Heterobasidion Root Disease which affects pines and balsam fir and bark beetles that affect pine species. In an effort to protect the forest from these threats, the Contractor agrees to the following complete measures to protect the forest from disease:

The Purchaser shall not enter any Vilas County Forest lands or the premises with any Off-Road Equipment without having cleaned such equipment of all soil from the previous harvest and shall only enter the premises harvest following adequate cleaning as determined by the Seller's Representative. If previous job(s) included entering stands with confirmation of Heterobasidion Root Disease, Purchaser must clean logging equipment (tires, cutting head, etc.) with pressured water prior to entering the premises.

The trees on the project area contain white pine, red pine or balsam fir and if HRD is confirmed in the stand or is identified in Vilas County or an adjacent county, the contractor **agrees to follow the Heterobasidion Root Disease (HRD) requirements.**

The trees on the project area contain white pine, red pine or jack pine. To reduce the risk of damage to residual trees by bark beetle infestations during harvesting operations, **all cut pine products will be required to be removed from the sale area within 14 days during the period of May 15 to August 15 in one or more cutting units on the premises.**

[Guidelines for stump treatment to reduce the risk of introduction and spread of Heterobasidion root disease in Wisconsin](#) should be used by the county forests.

The HRD guidelines are designed to help property managers and landowners determine whether the preventive pesticide treatment should be used to reduce the risk of introduction and spread of HRD at the time of harvest in a pine and/or spruce stand.

It is Vilas County's policy to follow the "Guidelines for stump treatment to reduce the risk of introduction and spread of Heterobasidion root disease in Wisconsin", as may be required if HRD is identified as a risk.

610.3.2 Funding

The County Forest will make all reasonable efforts to secure funding for control efforts, through county funds, or other state, federal or private funding sources for projects related to monitoring the forest and providing protection of the forest from pest and pathogens.

610.3.3 Special Projects

The County may cooperate with other agencies of the Federal, State and Tribal governments or other County departments in forest pest and pathogen research, monitoring and control.

611 CONTROL OF INVASIVE PLANT SPECIES

Invasive plants can cause significant negative impacts to the forest. Invasive species can displace native plants and hinder the forest regeneration of desired species,

preventing those species from dominating habitats where those species are critical to the long-term health of the forest. There are a number of invasive plant species in varying densities on the County Forest. Some warrant immediate and continual treatment efforts while others may be allowed to remain due to extent and financial ability to control them. The County will continue to train staff in invasive species identification as well as attempt to secure funding sources to control them as much as is practical. Invasive plants on the forest should be documented as well as potential response to new infestations.

The invasive plant species listed in the section may not have confirmed populations on the County forest, but these species do have the highest likelihood of being located on the forest at some point due to populations identified and confirmed in the regional area. Due to the heightened probability, control of these species is defined in this plan. Any species not identified in this plan will have identification and control specified by Wisconsin DNR invasive species staff in collaboration with the Wisconsin Headwaters Invasives Partnership

611.1 Funding and Partnerships

Grant opportunities for invasive species control funding can be found on the [Financial Assistance webpage](#) of the Wisconsin Invasive Species Council. The number of grants for local governments and county forest is limited, especially for terrestrial invasive plant control. Some grants, such as the Department of Natural Resource's [turkey stamp program](#), support invasive plant control as part of larger efforts to promote certain outcomes and might be applicable. The Vilas County Land & Water Department may provide assistance with invasive plant identification and control efforts.

The Department of Natural Resources promotes the formation of cooperative invasive species management areas (CISMAs) through its [Weed Management Area – Private Forest Grant Program](#). While activities funded by this grant are restricted to non-industrial private

forests, CISMAs are encouraged to partner with other groups in their area and some can provide technical support to county forests. Vilas county is currently a member of the Wisconsin Headwaters Invasive Partnership (WHIP) and will continue participation with that CISMA and/or other groups as determined appropriate.

611.2 Best Management Practices

In 2009, the Department of Natural Resources and many stakeholder groups approved a series of Best Management Practices (BMPs) for minimizing the spread of forest invasive plants. The full text of the [BMPs](#) is found on the Wisconsin Council on Forestry website. Voluntary use of the BMPs during forestry stewardship activities reduces the spread of invasive plants that can impede forest regeneration in county forests.

BMPs used before, during and after a timber harvesting and projects promote regeneration of desirable species. Reasonable efforts to clean vehicles, equipment, footwear and other clothing helps reduce the spread of seeds and plant fragments to un-infested forests. **Planning the sequence and timing of all activities** to reduce contact with invasive plants is another helpful strategy. Similarly, controlling populations of invasive plants before projects reduces the risk of spreading them. **Follow-up monitoring of disturbed areas** can detect populations of invasive plants while they are still small and more easily managed.

Equipment Cleaning Contract Requirements

Vilas County contracts for silvicultural treatments **and other projects on the County forest** that include the movement of equipment on the Vilas County Forest will require the following contract clauses in relation to Invasive Species:

“The Vilas County Forest is at risk from introduction invasive insects including emerald ash borer and jack pine bud worm and a wide variety of invasive plants which affect a wide variety of forest habitats. In an effort to protect the forest from these threats, the contractor agrees to complete

the following measures to protect the forest from invasive insects and invasive plants:

1. The Contractor shall not enter any Vilas County Forest lands or the premises with any Off-Road Equipment without having cleaned such equipment of insect larvae, insects, seeds, soil, vegetative matter, and other debris that could contain or hold seeds or plant material of invasive species as identified and defined by the Wisconsin DNR in **Ch. NR 40**. For purposes of this provision, “Off-Road Equipment” includes all logging and construction machinery, except for log trucks, chip vans, service vehicles, water trucks, pickup trucks, cars, and similar vehicles.
2. Prior to moving any Off-Road Equipment subject to the cleaning requirements set forth above, the Contractor shall provide the Vilas County information on the cleaning measures undertaken or provide a letter from an independent resource professional stating that equipment was inspected prior to moving to its current location and that there are no known invasive species at that site.
3. Contractor shall provide Vilas County 24-hour advanced notice requesting an equipment inspection and make the equipment available for inspection at the Vilas County Forestry Department located at 2112 N. Railroad Street, Eagle River, WI or an agreeable alternate location. Equipment shall be considered determined clean when a visual inspection does not disclose seeds, soil, vegetative matter, and other debris that could contain or hold seeds or plant material. Contractor shall not be required to disassemble equipment unless so directed by the Vilas County Representative, for reason, during inspection.
4. Contractor agrees that authorization to enter the Vilas County Forest will only occur after satisfactory equipment inspection or verification of cleaning compliance by the Vilas County Representative.

611.3 **Invasive Plant Species Priority List** **(Wisconsin Headwaters Invasives Partnership)**

Being prepared for new invasive species involves maintaining a good awareness of current invasives in our area. From 2012 to 2014, WHIP invested significant effort to capture a “snapshot” of the status of local invasive plant populations.

WHIP carried out walking surveys on the right-of-ways along all county highways in Oneida and Vilas Counties, which yielded 2381 invasive plant records. Maps produced from the survey data reveal relatively low occurrences of invasive plants (compared to other areas of the state), although WHIP recognizes the importance of being prepared for detecting new species spreading northward and the financial implications of mitigating these species after becoming established.

Using these survey results and consulting with partners, WHIP has created three Priority Lists of terrestrial invasive plant species: “Early Detection & Response”, “Priority Management”, and “Watch”. Categories based on overall distribution, local abundance, and ecological and/or human health threats. These lists are intended to serve as a guideline for WHIP members and partners, and will be reviewed and adjusted as needed. Table 611.3A provides the invasive plant species priority listing:

Table 611.3A

Common Name	Scientific Name	Status in Wisconsin	Management Objective
		R = Restricted P = Prohibited	Contain, Control, Eradicate, or Other
Early Detection and Response			
Wild Chervil	<i>Anthriscus sylvestris</i>	P	
Common Reed (non-native)	<i>Phragmites australis</i>	P/R (R in WHIP area)	
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	R	
Wild Parsnip	<i>Pastinaca sativa</i>	R	
Garden Valerian	<i>Valeriana officinalis</i>	R	
European Marsh Thistle	<i>Cirsium palustre</i>	P/R (R in WHIP area)	
Butterfly Dock	<i>Petasites hybridus</i>	P	
February Daphne	<i>Daphne mezereum</i>	not regulated	
Priority Management			
Glossy Buckthorn	<i>Frangula alnus</i>	R	
Common Buckthorn	<i>Rhamnus cathartica</i>	R	
Garlic Mustard	<i>Alliaria petiolata</i>	R	
Purple Loosestrife	<i>Lythrum salicaria</i>	R	
Japanese Knotweed	<i>Polygonum cuspidatum</i>	R	
Yellow Flag Iris	<i>Iris pseudacorus</i>	R	
Eurasian Honeysuckles	<i>Lonicera tatarica</i> , <i>L. morrowii</i> , <i>L. x bella</i>	R	
Leafy and Cypress Spurge	<i>Euphorbia esula</i> , <i>E. cyparissias</i>	R	
Plumeless Thistle	<i>Carduus acanthoides</i>	R	
Canada Thistle	<i>Cirsium arvense</i>		
Musk Thistle	<i>Carduus natans</i>		
Japanese Barberry	<i>Berberis thunbergii</i>	R	
Garden Yellow Loosestrife	<i>Lysimachia vulgaris</i>	R	
Common Tansy	<i>Tanacetum vulgare</i>	R	
Black Locust	<i>Robinia pseudoacacia</i>	R	
Crown Vetch	<i>Coronilla varia</i>	R	
Watch List			

Definitions:

Early Detection and Response: This category of species exist only in isolated,

scattered populations and are of high priority for early detection and rapid response efforts. Eradicating new invasions of these species early is the most successful way to prevent their spread.

Priority Management: Species in this category are established in the WHIP management area and their presence can negatively impact natural areas, making their control and management necessary.

Watch: Species in this category are yet to be observed in the WHIP management area but have been recorded in at least one adjacent county. These plants are a detection priority as they are known to be particularly damaging either to ecological systems or to human health.

Status in Wisconsin: P = Prohibited, R = Restricted Species are chosen for regulation by state agencies based on the harm they pose to the state's environment, economy, and/or public health. In general, species that are more widespread or naturalized are restricted while less widespread species are prohibited. The transport, introduction, and sale of all regulated species is illegal. In Wisconsin, it is illegal to possess a prohibited species, and property owners are legally required to control prohibited species present on their property.

611.4 Early Detection and Priority Invasive Ecological Threats and Control

Practices:

611.4.1 Wild Chervil

Ecological threat:

- Invades roadsides, open woods, fields and pastures.
- It is a host to parsnip yellow fleck virus which infects carrots, celery and parsnips.
- It has been planted as an ornamental and is found in some European wildflower seed mixes.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of

SFI and FSC as established and modified.

Mechanical: Hand pull or dig up rosettes or small plants ensuring to remove the entire root. Repeated mowing throughout the growing season will deplete root reserves and prevent seed set.

Chemical: Foliar spray with either clopyralid or dicamba before blooming and one month after a pre-bloom cut.

611.4.2 Common Reed- Phragmites (non-native)

Ecological threat

- Invades moist habitats including lakeshores, river banks and roadways. It is common in disturbed areas and can tolerate brackish waters, dry conditions and alkaline to acidic conditions.
- It can quickly become established with extensive rhizomes taking over underground. These rhizomes store energy so the plant can recover from cutting, burning or grazing.
- Common reed alters hydrology and wildlife habitat, increases fire potential and shades native species.
- It can spread through root fragmentation, long runners above ground and sometimes wind-blown seeds or cut stem fragments.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: After a chemical application either mowing or burning can be used for additional control and maintenance.

Chemical: Imazapyr or glyphosate can be used as a foliar spray or applied to cut stems after using the bundle and cut method in late summer-fall.

The use of herbicides near water or wet ground may require a permit and aquatic formulas of herbicide.

611.4.3 Oriental Bittersweet

Ecological threat

- Invades forests, woodlands, fields, hedge-rows and coastal areas and can grow in open sites or under a closed forest canopy.
- Oriental bittersweet grows rapidly and is tolerant of a wide range of habitats.
- May damage trees by girdling trunks with its woody stem, shading out the tree's leaves or weighing down its crown making it susceptible to damage from wind or heavy snowfall.
- It is widely planted as an ornamental vine and is sometimes planted accidentally when mistaken for American bittersweet.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Dig out or hand pull seedlings. Cut the base of the vines strangling trees, allowing upper foliage to die back.

Chemical: Basal bark with triclopyr ester plus a surfactant. Cut stem treatment with glyphosate or triclopyr amine. Foliar spray with triclopyr ester or triclopyr amine plus a non-ionic surfactant.

611.4.4 Wild Parsnip

Ecological threat:

- Invades prairies, oak savannas and fens as well as roadsides, old fields, and pastures.
- Broad habitat tolerance; grows in dry, mesic, or wet habitats, but it does not grow in shaded areas.
- CAUTION: When sap contacts skin in the presence of sunlight, it can cause severe rashes, blisters, and discoloration of the skin (phytophotodermatitis). Wear gloves, long sleeves and long pants when handling.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of

SFI and FSC as established and modified.

Mechanical: Cut root at an angle 1-2” below the soil surface. A brush-cutter can also be used for large populations before seeds set. Remove flowering heads and dispose of in a landfill or by burning.

Chemical: Spot treat rosettes with 2, 4-D, metsulfuron-methyl or glyphosate. Spot treat adult plants mid-May to mid-June with metsulfuron-methyl plus a surfactant.

611.4.5 Garden Valerian

Ecological threat:

- Invades upland forests, wetlands, marshes, woodland swamps, grasslands, and stream edges.
- Tolerant of both wet and dry conditions.
- Rapidly expanding its range in northern Wisconsin.
- Early emergence, vigorous growth habit and the ability to self-seed give this species a competitive advantage resulting in the displacement of native species.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Pull, cut or mow plants prior to flowering.

Chemical: Foliar spray with triclopyr or glyphosate.

611.4.6 European Marsh Thistle

Ecological threat:

- Prefers moist, acidic soils and is somewhat shade tolerant. Found along roadsides, old fields, in wetlands, forest edges, beach and dune areas. In Wisconsin, European marsh thistle occurs in localized populations, primarily in northern counties.
- Once introduced, this plant can aggressively colonize natural areas, decrease biodiversity and compromise the ecological integrity of an area.

- Spontaneous hybrids between European marsh thistle and Canada thistle have been reported from European countries.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Hand-pull or dig rosettes. Repeated pulling and mowing (minimum three times per growing season) will weaken second-year plants; mow when flower buds are just about to open.

Chemical: Foliar spray glyphosate during the early bolting phase when plants are 6-10" tall, during the bud to flower phase or applied to rosettes in the fall. Foliar spray with clopyralid or aminopyralid.

Biological: Field trials are ongoing in Canada using the *Rhinocyllus conicus* weevil.

611.4.7 Butterfly Dock

Ecological threat:

- Invades wetlands, forests, forest edges, bogs, marshes, and other semi-shaded moist areas.
- Huge leaves, spanning 100 cm across, shade out native species.
- Aggressive growth quickly crowds out desired species.
- Plants readily reproduce by root fragmentation and creeping rhizomes.
- This species is cultivated for its medicinal properties.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Due to the plants spreading rhizomes, dig or hand pull the entire plant's root system. Monitor for re-sprouts. The possibility of

accidental spreading is high due to the plant's ability to reproduce via root fragments. Dispose of plant debris in trash bags.

Chemical: Apply herbicides during the active growing season. Glyphosate or Metsulfuron can be used as a foliar spray, painted directly on the large leaves or as a spot treatment.

611.4.8 Glossy Buckthorn

Ecological threat:

- Invades wetlands including acidic bogs, calcareous fens and sedge meadows. It also grows well in a variety of upland habitats and tolerates full sun to deep shade.
- It can form dense, even-aged thickets, reducing light availability for understory species and preventing native tree regeneration.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Prescribed fire kills seedlings. Small plants may be hand-pulled. Larger plants can be dug or pulled using a leverage tool such as a weed wrench. Effective girdling of trees requires stripping the bark to expose the hardwood at a minimum length of six to ten inches. This may need to be repeated. Restoration of flooding or high water tables in areas where water tables were artificially lowered may eliminate glossy buckthorn.

Chemical: Cut-stump treatment with glyphosate in late fall; cut-stump or basal bark spray treatment around the stem with triclopyr ester in late fall through the winter.

611.4.9 Common Buckthorn

Ecological threat:

- Invades oak forests, riparian woods, savannas, prairies, old fields, and roadsides. It thrives particularly on well-drained soils.
- Common buckthorn has a broad environmental tolerance. It leafs out very early and retains its leaves late into the growing season, giving them a longer growing season than native plants.
- Creates dense shade, eliminating regeneration of tree seedlings and understory species.
- Allelopathic; produces chemical compounds that inhibit the growth of other vegetation.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Small plants may be hand-pulled. Prescribed fire for seedlings. Larger plants can be dug or pulled using a leverage tool such as a weed wrench. Girdling trees require stripping the bark to expose the inner hardwood at a minimum of six inches. Effective any time of year.

Chemical: Cut-stump treatment with glyphosate in late fall. Cut-stump or basal bark spray treatment around the stem with triclopyr ester in late fall through the winter.

611.4.10 Garlic Mustard

Ecological threat:

- It Invades high-quality upland and floodplain forests and savannas, as well as disturbed areas, such as yards and roadsides. It is sometimes found in full sun, though most often grows in areas with some shade, and does not do well in acidic soils.
- Native herbaceous cover has been shown to decline at sites invaded by garlic mustard.
- Garlic mustard exudes antifungal chemicals into the soil that disrupt associations between mycorrhizal fungi and native plants, suppressing native plant growth.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Hand pull in early spring before seed set. If plants are flowering, place in plastic bags for trash disposal or burn. Cut plants at their base just after the flower stalks have elongated but before any flowers have opened; they may have to cut more than once during a growing season. Place pulled/cut plants in plastic bags for trash disposal. Use controlled burns in fall or early spring.

Chemical: Foliar applications of glyphosate in early spring or late fall when native plants are dormant.

611.4.11 Purple Loosestrife

Ecological threat

- Prefers moist soils and shallow waters where it competes with native wetland plants. It will adjust to varying light conditions and water levels.
- Has been widely planted as an ornamental where it escapes to nearby waterways. It is still sold in nurseries as a sterile variety; however, it can still produce viable seeds with wild varieties.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Young, small plants can be dug or pulled. Larger plants can be dug if all root fragments are removed. Burn, landfill or bury all plant parts deep in the ground. Mowing is not recommended as plant parts may re-sprout and seeds may be dispersed.

Chemical: Imazapyr or glyphosate works well against purple loosestrife. If near water a permit may be required and aquatic-use formulas of these herbicides should be used.

Biological: Wisconsin has seen some success using the leaf-eating Galerucella beetle to control loosestrife with larger populations

611.4.12 Japanese Knotweed

Ecological threat:

- New infestations of Japanese knotweed often occur when soil contaminated with rhizomes is transported or when rhizomes are washed downstream during flooding.
- It poses a significant threat to riparian areas where it prevents streamside tree regeneration and increases soil erosion.
- Root fragments as small as a couple of inches can resprout, producing new infestations.
- Disrupts nutrient cycling in forested riparian areas.
- Plants contain allelopathic compounds (chemicals toxic to surrounding vegetation).

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Hand pull young plants; dig or till when soil is soft. Plants should be pulled up by the root crown, trying to remove as much of the rhizomes as possible because any rhizomes remaining in the soil will produce new plants at each node. It is possible to eradicate small patches of knotweed with the repeated and persistent cutting of the plants. Properly dispose of plant debris; fragments as small as a couple of inches can resprout, producing new infestations.

Chemical: Plants are more susceptible to herbicides if they are cut when 4-5' tall and the regrowth treated around 3' tall. Foliar application of glyphosate with a surfactant, triclopyr formulated for use with water,

dicamba, or imazapyr may be effective on large populations. Tests involving large-bore needle injection of glyphosate into the lower nodes of each stem have been successful.

611.4.13 Yellow Flag Iris

Ecological threat:

- Yellow flag iris can produce many seeds that can float from the parent plant, or plants can spread via rhizome fragments. Once established, it forms dense clumps or floating mats that can alter wildlife habitat and species diversity.
- All parts of this plant are poisonous, which results in lowered wildlife food sources in areas where it dominates.
- This species has the ability to escape water gardens and ponds and grow in undisturbed and natural environments. It can grow in wetlands, forests, bogs, swamps, marshes, lakes, streams and ponds.
- Dense areas of this plant may alter hydrology by trapping sediment.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Small populations may be successfully removed using physical methods. Care should be taken if hand-pulling plants as some people show skin sensitivity to plant sap and tissues. All parts of the plant should be dug out – particularly rhizomes and disposed of in a landfill or by burning. Cutting the seed heads may help decrease the plant spreading.

Chemical: Aquatic formulas of herbicides may be used to control yellow flag iris, however, permits may be needed. Foliar spray, cut stem/leaf and application and hand swiping of herbicide have all shown effectiveness.

611.4.14 Eurasian Honeysuckles- Japanese honeysuckle, Amur honeysuckle,

Morrow's honeysuckle, Tartarian honeysuckle, Bell's or showy
bush honeysuckle

Ecological threat:

- Invades forests, prairies, fields and roadsides and may form dense stands.
- Plants leaf-out early and lose leaves late in the season which shade out native species and out-competes for nutrients.
- May be allelopathic -- releases chemical compounds that inhibit the growth of other plants.
- Shrubs and young trees can be killed by girdling; Japanese honeysuckle vines twist tightly around stems and trunks.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Pull or repeated mowing followed up by chemical control. Fire may kill seedlings and set back older plants.

Chemical: Treat foliage with glyphosate or triclopyr amine in fall when native plants are dormant. Where plants grow off the ground, cut vines just above the soil surface and treat immediately with glyphosate or triclopyramine.

611.4.15 Leafy Spurge

Ecological threat:

- It invades open areas, including prairies, savannas and roadsides. It can quickly create monocultures, excluding native vegetation and reducing wildlife habitat value.
- Tolerant of a wide range of habitats, from dry to moist and sunny to semi-shade. Most aggressive in areas where soil moisture is limited.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Hand pulling or digging is only effective if the entire root system is removed.

Chemical: Aminopyralid is effective for spot treatments. Imazapic with methylated seed oil (MSO) is recommended for fall applications.

Biological: Stem and root boring beetle, four root-mining flea beetles and a shoot-tip gall midge.

611.4.16 Cypress Spurge

Ecological threat:

- Introduced as an ornamental ground cover.
- Often found invading dry grasslands, pastures, agricultural fields, disturbed areas and right-of-ways.
- Potentially toxic to horses and cattle and may cause dermatitis on humans.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Continual cutting and digging are needed to exhaust the root reserves. Not recommended due to extensive root systems.

Chemical: Foliar spray of glyphosate or aminopyralid.

611.4.17 Plumeless Thistle

Ecological threat

- Infest low-quality areas first, such as roadsides, disturbed areas, ditch banks and old fields. Spreads into high-quality prairies.
- When in meadows and pastures, grazing animals avoid plumeless thistle and focus on native plants giving the invasive the upper hand.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Close mowing of second-year plants twice per growing season just before flowering. Cut or mow at early bud both times. Cut

plants with a sharp shovel one to two inches below soil surface before flowering.

Chemical: Spot spray rosettes in fall with 2, 4-D ester; foliar spray with clopyralid or metsulfuron-methyl.

611.4.18 Canada Thistle

Ecological threat:

- It invades undisturbed areas such as prairies, savannas, glades, dunes, streambanks, sedge meadows and forest openings. It also invades croplands, pastures, lawns, gardens, roadsides, ditches and waste sites.
- Once it has established it spreads quickly, forming monocultures.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Repeated pulling and mowing (minimum three times per growing season) weakens roots; mow when flower buds are formed but have not yet opened. Late spring (May/June) burns for three consecutive years stimulates seed germination and kills seedlings. Later season burns are needed because early-season burning can stimulate plant growth and flowering.

Chemical: Foliar spray glyphosate during the early bolting phase when plants are 6-10" tall, during the bud to flower phase, or rosettes in the fall; foliar spray with clopyralid or metsulfuron-methyl.

Biological: Stem weevil (*Ceutorhynchus litura*), bud weevil (*Larinus planus*), stem gall fly (*Urophora cardui*), and foliage feeder (*Cassida rubiginosa*).

611.4.19 Musk Thistle

Ecological threat

- Invades areas such as pastures, old fields, roadsides, waste areas, ditch banks and prairies.
- When in meadows and pastures, grazing animals avoid musk thistle and focus on native plants giving the invasive the upper hand.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Sever root one to two inches below the soil surface.

Repeated mowing (minimum two to three times per growing season) when flower buds are about to open will prevent seed production.

Chemical: Applications are most effective when plants are in the rosette stage. Foliar spray with glyphosate during bolting phase when plants are 6-10" tall, during the bud to flower phase, or rosettes in the fall. It can also apply a foliar spray with clopyralid or metasulfuron-methyl. For musk thistle on severely disturbed sites, apply of 2, 4-D ester or dicamba in early bolting phase. Or apply in combination – dicamba with 2, 4-D ester.

Biological: The flower head weevil (*Rhinocyllus conicus*) and the rosette weevil (*Trichosiocalus horridus*), have been released in some states but not in Wisconsin due to risks presented to rare native thistles.

611.4.20 Japanese Barberry

Ecological threat:

- Shade tolerant, drought-resistant, and adaptable to a variety of open and wooded habitats, wetlands, old fields and disturbed areas.
- It forms dense stands in natural habitats, dominating the forest understory by shading out native plants and changing foraging habits of wildlife.
- Spreads vegetatively through horizontal branches that root freely when they touch the ground.
- Research shows infested forests have higher rates of Lyme disease-carrying ticks.

- White-tailed deer avoid browsing barberry due to the spines, preferring to feed on native plants, giving it a competitive advantage.
- Prefers well-drained soils and sunny habitats, but will survive and produce fruit in even heavily shaded environments.
- Very invasive and widespread across the eastern United States and the midwest.
- Cultivars are widely planted as ornamentals.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Plants can be pulled out or dug up, easiest in early spring. Remove all roots and watch for resprouts. Cutting without herbicide will result in resprouting. Mow or cut larger plants before seed set if not able to remove the entire plant. Prescribed burns in early spring or late fall can be effective to kill seedlings. Use this method in fire-adapted communities to prevent the mortality of surrounding desired vegetation.

Chemical: Foliar spray with metsulfuron-methyl, triclopyr or glyphosate. Adding a penetrating oil can be effective when used as a cut-stump treatment and basal barking.

611.4.21 Garden Yellow Loosestrife

Ecological threat:

- It invades wet areas including wetlands, marshes, stream edges, lakes and fens.
- Invasive throughout much of the United States. Banned from sale in Connecticut and Washington state.
- Seeds can remain viable in the soil for up to 20 years.
- Plants reproduce both vegetatively and by seed.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Hand-pull individual plants. Be sure to remove the entire rhizome. Monitor for re-growth. Cover infestations with black landscape fabric for a minimum of one entire growing season.

Chemical: If populations are found near water, be sure to use aquatically-approved herbicides. Glyphosate, triclopyr and imazapyr have all been reported as effective.

611.4.22 Common Tansy

Ecological threat:

- Invades well-drained or sandy soils in open disturbed areas, roadsides, fields, prairies, pastures and hedgerows.
- Once established, infestations of common tansy displace native vegetation.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Can be cut or mowed prior to flowering to prevent seed set. Removing the dead vegetation with controlled burns can make the plants easier to target with herbicides.

Chemical: Foliar spray rosettes in spring using dicamba, glyphosate, metsulfuron-methyl with a surfactant, 2, 4-D, clopyralid or a mixture of 2, 4-D and clopyralid.

611.4.23 Black Locust

Ecological threat:

- Invades forests, upland prairies and savannas, pastures, old fields and roadsides.
- Its vigorous vegetative reproduction forms extensive, dense groves of clones that exclude native vegetation.
- Damage to roots or stems (such as from fire, wind, cutting, or disease) stimulates vigorous sprouting, root suckering and lateral spread.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: Neither cutting nor girdling alone are effective to kill a clone; they stimulate stump and root sprouting or suckering. Burning and mowing can temporarily control the spread of young shoots from a parent tree or clone; however, mowing can promote seed generation and burning can stimulate sprouting.

Chemical: All black locust stems in a clone must be treated for a chemical treatment to be effective. Foliar spray trees under 8' tall, basal bark treat trees over 8' tall or all trees under 4" dbh, chainsaw girdle/treat or cut/treat trees over 8' tall and over 4" dbh. Foliar spray with metsulfuron-methyl or clopyralid during mid-summer. Basal bark with triclopyr ester in a band at least 6 inches high all around the stem at approximately 12 inches from the ground. Apply clopyralid, triclopyr or glyphosate to a girdle cut at standing height or to cut stumps from late summer into the dormant season.

611.4.24 Crown Vetch

Ecological threat:

- Crown vetch is difficult to control and rapidly reproduces vegetatively via rhizomes that can grow up to 10 feet per year. One plant may grow to completely cover 70-100 sq. feet within 4 years. Its seeds can remain viable in the soil for more than 15 years.
- Crown vetch prefers sunny, open areas, but also has a broad environmental tolerance. It can grow in full to partial sun, is drought tolerant but also withstands heavy precipitation and colonizes a wide range of soil types.
- It invades a variety of ecosystems including prairies, grasslands, dunes, floodplains, forest edges, gravel bars in waterways, agricultural lands and roadsides.
- Crown vetch alters native ecosystems through nitrogen fixation, enhancing soil fertility.
- It can climb over and smother shrubs and small trees as well as shade-out native herbaceous vegetation.

- The invasion of crown vetch can also change fire behavior by increasing fuel loads.
- Crown vetch has historically been planted for erosion control and is widely distributed throughout the state.

Control: control practices shall follow application guidelines as established in regulation and as required under certification standards of SFI and FSC as established and modified.

Mechanical: For smaller infestations, repeated hand-pulling can be effective. Make sure to pull up the whole plant (including the roots). Cover patches with black landscape plastic or fabric for a minimum of one entire growing season. Mow in late spring for several consecutive years. Populations can also be mowed twice every year, once in June and once in late August, correlated with leaf-out. This will need to be repeated for multiple years. Controlled burning in late spring can be effective but may need to be repeated for several years for adequate control. Burning may stimulate seed germination.

Chemical: Be sure to follow all label rates when applying herbicides. Foliar spray clopyralid, metsulfuron, or aminopyralid ensuring all leaves are wet but not dripping. To ensure good foliar coverage, the previous year's growth should be removed to ensure herbicide contact with actively growing plants. Spot application should be done with a hand sprayer and should be uniform such that the entire leaf is wetted, but not dripping. All herbicides are most effective when applied in early spring, before flowering, when the plant is actively growing. Clopyralid is a more selective herbicide and has shown to be more effective than other herbicides. 2,4-D amine or a solution of 2% active ingredient triclopyr are both broadleaf specific. A 1 or 2% active ingredient solution of glyphosate can also be used, but this is a non-specific herbicide.

612.1 WHITETAILED DEER

Forest regeneration and reproduction is critical to sustain both timber production and wildlife habitat and the overall health of the forest and the deer herd. As a keystone species, deer can affect forest regeneration, long-term forest production, and forest sustainability. This is a concern for all interested in forest production and trying to balance deer numbers with habitat capability.

Vilas County Forest may monitor herbivory impacts during forest reconnaissance and provide data and recommendations to the County Deer Advisory Council in relation to deer populations and habitat limitations. Vilas County may also enter parts or all of the forest into the Deer Management Assistance Program in efforts to manage the deer herd and the forest to the maximum benefit to the people of the Vilas County.

612.2 BEAVER

Streamside forest lands, wetlands, and roads are commonly impacted by beaver dams and the resulting flooding in areas. Beaver has negative impacts to forest production, potential negative impacts to water temperatures and trout fisheries but may be a benefit to waterfowl and wetland dependent wildlife species.

Vilas County Forest will monitor beaver activity in areas impacted and may contract for beaver removals where impacts from flooding of timber or potential loss of roads occurs. Where impacts to beaver are minimal or wetland habitat is created, the beaver no actions may occur dependent upon site.

612.3 OTHER SIGNIFICANT DAMAGE

From time to time additional wildlife damage from various wildlife species occurs in relatively small areas. Local damage of large trees and plantation from porcupine

and girdling of seedlings and saplings from mice and voles and sometimes snowshoe hare are common. When identified by staff as a significant issue, these issues will be addressed by staff directly, by referrals of areas to hunters, or with assistance from the DNR.

613 CONTROL OF HUMAN IMPACTS

613.1 FOREST FRAGMENTATION

Forest fragmentation, by sale and partitioning of large forest land blocks, has resulted in blocks of forest across the landscape which cannot provide the ecological needs of many species. Small ownership cannot be economically managed for forest health and many owners with many priorities precludes these areas from proper forest management. Under S. 28.11, Wis. Stats., the County Forest law, the State of Wisconsin regulates the use of the forest lands and retains the development rights of the property to insure the forest is retained as forest. Forest fragmentation resulting from the sale of lands on the County forest cannot occur.

Forest fragmentation can also occur when human use including development of recreation areas, trails, and road densities become too compact. This compact development results the land not having the ability to provide for ecological needs of the plants and animals that exist in the areas.

To limit the effects of forest fragmentation, **all development on the County forest** will require planning and approval of Committee prior to construction activity.

613.2 TIMBER HARVESTING

All timber harvesting shall be by contract only and require approval of the Committee. Timber harvesting shall be only be conducted in conformance with sustainable harvesting under direction of a qualified forester to provide continuous supply of timber while providing for growth and regeneration of forest for future generations. Vilas County will follow standards as set forth under the Sustainable Forestry Initiative (SFI) and the Forest Stewardship Council (FSC) and may retain

agreements for those organizations to audit standards to insure the public of sustainable practices.

613.2.1 COOPERATION WITH THE DEPARTMENT OF NATURAL RESOURCES

Pursuant to s. 28.11, Wis. Stats. and the Vilas County Forest and Land Ordinance, the Vilas county will cooperate with the designated DNR Liaison and Forestry Team Leader in planning and development of recreational developments and trails on the County forest.

613.3 NON-TIMBER FOREST PRODUCT

Collection of any product on the County forest including but not limited to firewood, Christmas trees, and balsam boughs shall require a permit issued by the Forest Administrator.

613.4 RECREATIONAL DEVELOPMENT AND TRAILS

Development of recreational sites and trails is an integral part of the County forest, however the development becomes a permanent impact to the natural resources, wildlife and timber production. Recreational developments also provide additional vectors for transfer of forest insects, disease, and invasive species onto the forest. To minimize the impacts to the natural resources and timber losses, all recreational developments and trails shall have a detailed plan established. Plans shall include mitigation considerations for protection of water quality, endangered species, historical and archaeological sites, wildlife habitat, and timber resources. Each plan should incorporate forest protection measures including but not limited to wildfire protection measures, invasive species monitoring protocols and rules and regulations established or in place to minimize negative impacts. This plan shall require review and approval of the Committee at a public meeting. Areas of intensive development, if recommended by the Forest Administrator, shall be designated as a special use area of the County Forest with required documents filed with the DNR to officially recognize that designation.

613.4.1 COOPERATION WITH THE DEPARTMENT OF NATURAL RESOURCES

Pursuant to s. 28.11, Wis. Stats. and the Vilas County Forest and Land

Ordinance, Vilas county will cooperate with the designated DNR Liaison

and Forestry Team Leader in protection of tree and forest health

**during project planning and management of recreational developments and
trails.**

613.5 ROADS AND ACCESSES

Roads and trails provide the public with ready access for the use of the County forest. Inside the County forest boundary there is a relatively high density of open public roadways including Federal, State, County, Township and County Forest roads. There is also a relatively high density of motorized and non-motorized recreational trails within the forest boundary. These roads and trails provide additional vectors for transfer of forest insects, disease, and invasive species onto the forest. Open roadways have also historically provided for increase illegal dumping of waste on the forest. In an effort to limit or reduce the negative effects of roadways and trails, all new roadways and trails will require committee action prior to establishment. Committee may consider reductions of open trails and roads to reduce densities when roadways and trails are determined to be unnecessary or redundant by committee action.

613.6 UNAUTHORIZED AND ILLEGAL USE OF THE FOREST

Unauthorized and illegal use of the forest including but not limited to dumping of waste, littering, construction of hunting blinds, target shooting, placement of advertising and signs, installation of un-permitted access roads and motorized access to un-authorized areas occurs on a regular basis throughout the forest. Policies, ordinances and laws exist to control these unauthorized and illegal activities. County forestry, parks and recreation staff shall work cooperatively with the Vilas County Sheriff's department and the DNR to deter unauthorized and illegal use of the forest. The staff will also take appropriate actions to remove and dispose of items placed on the forest without authorization or in violation of policies, ordinances and laws.

